

CLAIMS:

1. A voltage driver circuit for driving a device at a selected one of a plurality of voltages associated with respective device operations including a high voltage operation and a relatively lower voltage operation, the driver circuit comprising an input (IN), a single output (OUT) for connection to said device, and a plurality of voltage drivers between said input and said output including at least one high voltage breakdown driver (10) and at least one relatively lower breakdown voltage driver (Q7, Q8), the circuit being arranged such that, during a high voltage operation, said high voltage breakdown driver (10; Q1, Q2; Q3, Q4) is connected to said output and there is a substantially zero voltage drop across said relatively lower breakdown voltage driver, and, during a relatively lower voltage operation, said relatively lower breakdown voltage driver (Q7, Q8) provides the drive voltage for driving said device, the contribution of said high breakdown voltage driver to said drive voltage during said relatively lower voltage operation being substantially negligible.
2. A circuit according to claim 1, wherein the high voltage breakdown drivers comprise inverters consisting of high voltage breakdown transistors (Q1, Q2, Q3, Q4).
3. A circuit according to claim 1 or claim 2, wherein the at least one relatively lower breakdown voltage driver comprises an inverter consisting of relatively lower breakdown voltage transistors (Q7, Q8).
4. A circuit according to any one of claims 1 to 3, comprising two signal paths between the input and the output, a first signal path consisting of one or more high voltage drivers (10; Q1, Q2; Q3, Q4) connected in series, and a second signal path consisting of at least one low voltage driver (Q7, Q8), the first and second signal paths being connected in parallel to one another.
5. A circuit according to claim 4, comprising means for selecting the first signal path during high voltage operation.

6. A voltage driver circuit for driving a device at a selected one of a plurality of voltages associated with respective device operations including a high voltage operation and a relatively lower voltage operation, the driver circuit comprising an input (IN), a single output (OUT) for connection to said device, and a plurality of voltage drivers between said input and said output including at least one high voltage breakdown driver (10) and at least one relatively lower breakdown voltage driver (Q7, Q8), the high breakdown voltage driver comprising a voltage level shifter which is connected at the input of the circuit between first and second voltage lines, the output of said level shifter (Q1 B Q6) being connected to the input of a relatively lower breakdown voltage driver (Q9, Q10) connected to the output between said first and second voltage lines (POS, NEG).

7. A circuit according to claim 6, wherein said voltage level shifter comprises a partial level shifter.

8. A circuit according to claim 6 or claim 7, wherein the relatively lower breakdown voltage driver comprises an inverter consisting of thick gate oxide devices (Q9, Q10).

9. A circuit according to claim 8, wherein the thick gate oxide devices comprise GO₂ devices (Q9, Q10).

10. A circuit according to any one of claims 6 to 9, wherein said at least one relatively lower breakdown voltage driver comprises an I/O protection inverter.

11. A circuit according to any one of claims 6 to 10, wherein a high voltage pull-up or pull-down transistor (Q11) is provided between the output and the first or second voltage lines respectively.

12. A memory device, comprising a voltage driver circuit according to any one of the claims 1 to 11.

13. An integrated circuit, comprising or including a memory device according to claim 12.

14. A computing system, including an integrated circuit according to claim 13.